

NOW
IS THE
RIGHT
TIME



FOR FIVE MILLENNIA, LIBRARY SCIENCE WAS ITSELF THE ENTIRE FIELD of information science. The skills necessary for the collection, preservation and dissemination of the accumulating knowledge of mankind very early became centered in the progenitor of the modern library. The Keeper of the records—who in many cases served also as Dispenser of the gifts of knowledge—searched out, learned and sometimes invented the tools, methods and materials he needed to advance his career and the profession.

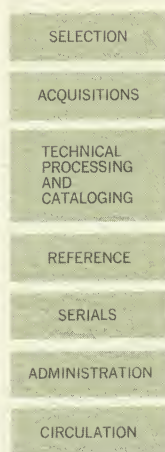
It was from the beginning a prestigious profession. In ancient Egypt, as in Assyrian and Babylonian lands, the power to record ideas and to read the inscribed records long remained the privilege of royal and priestly classes. The earliest libraries belonged to the temples. With the deification of Pharaoh, written words found appropriate housing within the royal palace, the palace librarian serving as tutor and advisor to the royal family. It was not unusual for a ruler to provide a tomb in the pyramid near the royal chamber for his librarian, an indication of the high regard in which the skill and knowledge of librarians were held.

The need for a broader-based institution rose with the democratization of knowledge. A genuine public library—the first of which there is any record—was established in the fourth century B.C. in Athens, the city which permitted even women and slaves to learn to read and write. In Alexandria, under the Ptolemies, library service reached a level requiring distinct specialization of personnel. Besides the eminent scholars (procuratores) who headed operations, the Great Library had its overseers (bibliothecarii), assistants (a bibliotheca), copyists (anti-quarii), archivists (bibliophulakes) and attendants (publici).

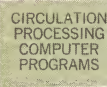
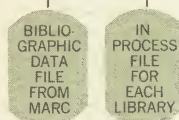
Following the introduction of Greek culture to Rome, library science continued to advance through improvements in materials—(parchment, metal pens and gall ink), in the codex form, (precursor to the modern book), in script and the development of the Roman alphabet, in the book production and distribution system. By the second century A.D. municipal libraries could be found the length and breadth of the Empire, some housed in magnificent public buildings. A topographical survey undertaken shortly before the end of the Empire enumerated 28 libraries in the vicinity of Rome.

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LIBRARY OPERATIONS



ALPS SYSTEM (AUTOMATED LIBRARY PROCESSING SERVICES)



LIBRARY PRODUCTS

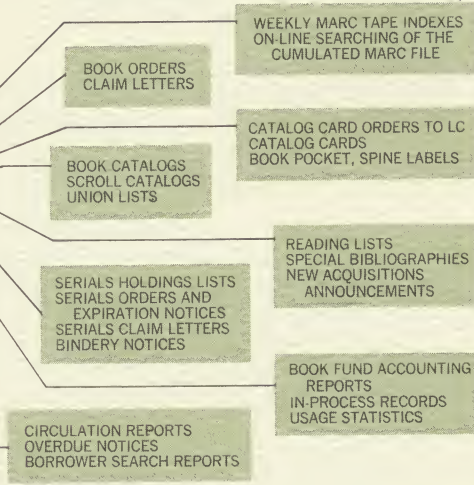


Chart of ALPS services showing services for each major library function. Development of ALPS stemmed from years of SDC research in the fields of human factors and computer and information sciences.

THE ALPS (AUTOMATED LIBRARY PROCESSING SERVICES) SYSTEM

ALPS is the name given to the system of machine-readable files and computer programs that the SDC Library Service Center uses to support its client libraries. BIBLIO and INPROS are the two major files available to libraries through the ALPS system.

BIBLIO FOR BIBLIOGRAPHIC RECORDS

The BIBLIO file contains the cataloging records distributed weekly by the Library of Congress on its new **MA**chine **R**eadable **C**ataloging (MARC) tapes. Each MARC tape contains approximately 1,000 entries for newly cataloged English language monographs. ALPS provides you access to the whole file of catalog records cumulated since the inception of MARC II early in 1969. Thus, literally at your fingertips, you have the authoritative Library of Congress catalog record for almost any recently published book in which you may be interested.

INPROS FOR YOUR PROCESSING RECORDS

The other main file, INPROS, contains in-process records for each participating library of the books it has ordered or recently acquired. As a client you may search your library's INPROS file at any time to obtain the status of an order, the titles of recent acquisitions or any other information the file contains.

INTERACT WITH ALPS FOR SEARCH AND RETRIEVAL

The heart of ALPS is a powerful and versatile information retrieval program, operating under time-sharing control on a large computer. With this program you, at the teletype terminal in your library, can converse with the computer to search the files. ALPS gives you a simple set of commands that are easily learned and let you work very rapidly. You can start your searching from several approaches, such as author or title or classification number, and can narrow or broaden the focus of your search almost at will, just as you would do in searching a card catalog or printed index. The results of the search can be printed at your terminal, or can be printed on another device such as the computer's line printer or can be used to build another file. Because time-sharing allows you to interact with the machine, your questions and commands can be answered immediately. There is no need to wait for hours or days to get back the results of a computer "run," and there is no danger that someone else with a higher priority may delay your work.

The bibliographic search and retrieval function of ALPS is obviously a powerful tool for any library. More important, this is just a starter; ALPS builds on this basic search and retrieval capability to provide you with a wide range of computer-assisted services.

Fifteenth century miniature of Jean Mielot, honorary secretary to Philip le Bon. Single volume hand reproduction by clerical personnel provided major means of library acquisition for over 4000 years. Enterprising Roman merchants of the first century A.D. published books (scrolls), mass produced by having one elocutionist dictate to a room full of scribes; resultant copies were cheap but likely to be erroneous. To secure its reputation as the finest research library in the world, the well-endowed Library of Alexandria sometimes borrowed original manuscripts and returned carefully executed copies of them, forfeiting the loan deposit.



ORDERING AND CLAIMING SERVICE

USE ALPS FOR ACQUISITIONS

ALPS provides you with a simplified ordering system. To acquire new books, you simply dial the computer and type in the books' LC card numbers. Standard ordering instructions (such as the name and address of your usual vendor, your usual purchase fund, and number of copies you usually purchase, etc.) are kept on file at the Library Service Center. You add this information only if a change is needed for a particular order. If the book you want is not listed in the BIBLIO file (drawn from the MARC records), you need type in only author, title, publisher and edition—still significantly less work than preparing forms manually.

GET BOOK ORDERS, LISTS, CLAIM LETTERS

For each book you order, the computer prints out eight copies of a standard 3 x 5 order form, ready for mailing to any vendor you choose. You receive these in a package together with a listing of all orders placed by you during the ordering period (usually three to four days). In addition, if your accounting system requires a purchase order, you can obtain a listing of the books covered by each order number to attach to your purchasing forms.

GENERATE A DATA FILE AUTOMATICALLY

By using ALPS to acquire new books, you drastically cut the clerical time presently consumed in preparing book orders. Claims take virtually no time at all, since they are tracked by computer. Moreover—and perhaps best of all—in the very process of ordering, you produce a machine-readable record that is automatically added to the INPROS computer file for your library. No re-keyboarding will be required in the future to prepare catalog cards, book cards, new acquisitions announcements, etc., etc.

Clay document and its storage sheath. Storage case with excerpt from inner document represents early form of labeling. Tablets in Ashurbanipal's library each bore a label identifying the jar, shelf and room in which they belonged. Papyrus scrolls in Egypt were sometimes stored in leather cases to which was affixed an identifying label of ivory, wood or metal. Call numbers are of ancient origin: instructions to users of the collection at Agene (in Babylonia) advised them to write down the number of the work they wanted to read and present it to the librarian who would go and get the tablets from storage.



TECHNICAL PROCESSING AND CATALOGING SERVICE

USE ALPS TO PROCESS NEW ACQUISITIONS

When you order books through the SDC Library Service Center, ALPS generates a four-letter code that uniquely identifies each book. Upon delivery of a book shipment, you simply dial the system and type in the codes, the receipt date, price and call number of each book. By using a special indicator to show the progress of books through technical processing, you will be able to find out the status of any particular book or determine the total number of books in any processing stage.

GET CATALOG CARDS, LABELS, ACQUISITION ANNOUNCEMENTS

Technical processing materials can be provided even if books are not ordered through ALPS. Catalog cards are available from the Library of Congress or the SDC Library Service Center. If you choose the former, ALPS will print an order to the Library of Congress for a set of catalog cards for each of your new acquisitions. If you order computer-printed catalog cards from us, you have the option of selecting standard LC or sim-

plified (Sears or modified LC) subject headings and having your own call number and the added entries printed on the appropriate cards. The card set you receive is arranged in filing order and includes an extra main-entry card for your shelf list. You may also order book spine and book pocket labels. If your library uses an automated circulation system, ALPS can provide you with machine-readable circulation cards. Libraries using traditional circulation procedures may obtain standard book cards. ALPS can also give you new acquisitions announcements in as many copies as you need.

SHELVE BOOKS ALMOST IMMEDIATELY

ALPS lets you take full advantage of the authoritative cataloging performed by the Library of Congress. By employing the time-shared computer to print your processing materials, you can have books ready for shelving almost immediately. You eliminate the need for extensive back room storage and complex in-process files. You can give patrons and staff timely announcements about your new acquisitions.

Partial catalog of holdings of Egyptian library at Edfu. Hieroglyphics inscribed on wall of library specify contents of 34 coffers of works. Catalog entries for the seventh century B.C. clay tablets in library of Kalakh included contents, opening words, numbers of lines and important subdivisions. A Benedictine catalog issued in 831 A.D. uses author



Book of what is to be found in the temple.



Book of the domains.



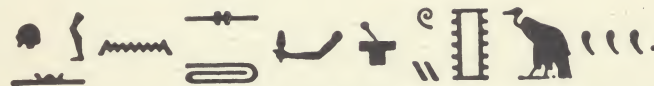
Catalogue of all writings engraved on wood.



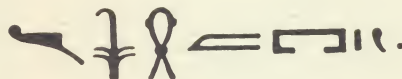
Book of the administration of the temple.



Book of the guardians of the temple.



Book of rites pertaining to the walls (for the protection of persons).



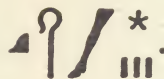
Book of the royal guard.



Book of incantations for warding off evils.



Book of the stations of the sun and the moon.



Book which governs the return of the stars.

entries and shows collation and contents notes; the Bodleian Library catalog of 1620 lists books alphabetically by entry word. Earliest catalog printed in the Colonies was Harvard's 1723 *Catalogus Librorum Bibliothecae Collegii Harvardini Quod Est Cantabrigiae in Nova Anglia*.

BOOK OR SCROLL CATALOGS OR CATALOG CONVERSIONS

USE ALPS FOR BOOK-FORM CATALOGS

Book-form catalogs (either books or microfilm rolls), unlike card files, are convenient, portable, easy to scan and available in many copies. On the other hand, book-form catalogs are difficult and expensive to keep up-to-date; their design requires a high degree of skill, and efficient production depends upon your catalog records being in machine-readable form. By drawing on the capabilities of ALPS and the experience of the SDC Library Service Center staff, however, you can now design and maintain a book or scroll catalog with little trouble.

GET FREQUENT CUMULATIONS

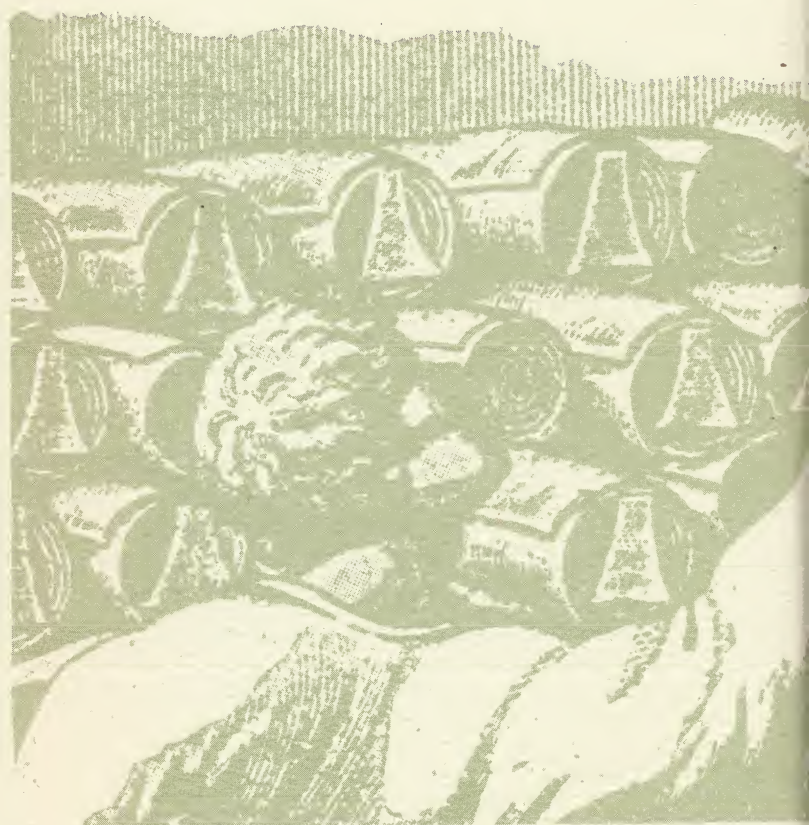
From the information you add in the ordering and technical processing stages, plus the data taken from the BIBLIO file, it is a simple and economical job for the computer to prepare frequent cumulations of your book-form catalog. You do not need to be concerned about the technical details of format, layout and composition—tell us your basic requirements, and the Library Service Center will do the rest.

ADVERTISE YOUR HOLDINGS

Book-form catalogs save time for librarians and clerks who need frequent access to catalog records, and they are an economical means of providing branch libraries with a record of the holdings for the whole system. Scroll catalogs (if microfilm reader-printers are available) are very economical, particularly when used for interlibrary loan activity or when cumulations are large and frequent.

NOTE: Should you decide to convert your existing pre-MARC catalog to machine-readable form, the experienced staff of the Library Service Center can accomplish the job as economically as possible. Our staff can not only make use of previous catalog conversions, it can also give full consideration to your special requirements and take advantage of equipment you may already have on hand.

Searching through roll books in a classical library. In mid-third century B.C. the 90,000 rolls belonging to the library at Alexandria were classified as poetry, history, philosophy, oratory or miscellaneous. Callimachus compiled a critical list of the library's contents by shelf, noting for each work, its title, line count, first words and author notes. Ashurbanipal's library at Nineveh was stored in many rooms arranged by subject matter: history, geography, religion, law, science, etc. Clay tablet bibliographies, which may have been posted for easy reference, indicate for each work its title, opening words, number of tablets, important subdivisions and location. Histories and codices prepared in the time of Hammurabi (20th century B.C.) indicate a sizable collection and orderly arrangement of source materials.



SPECIAL BIBLIOGRAPHY SERVICES



USE ALPS FOR REFERENCE

In just a few minutes at the teletype you can provide a patron with a special bibliography of recent books on any subject. Bibliographies can be compiled on the basis of LC or Dewey classification numbers, subject headings, publication date, juvenile or adult level, large print, author, and so on. Citations can be restricted to books in your collection or can be drawn from the whole BIBLIO file. Using the off-line printing capability, you can quickly compile reading lists that take advantage of current community interests or help teachers and students.

OBTAIN SELECTED CITATIONS

For ready reference or brief bibliographies, ALPS prints out at your terminal as many citations as you want. You control length and detail of the output. You can ask to see title and call number only, or the complete citation, or some level in between. If you prefer, bibliographies can be printed at the Library Service Center in as many copies as you wish for delivery or mailing to you within a day.

IMPROVE READER SERVICES

You can offer greatly expanded reference services without the heavy cost of manual searching, editing and typing. Because the system operates interactively, you can give patrons fast service for simple requests. You can provide uniquely tailored bibliographies for patrons with special needs. Better reader services can be expected to boost circulation figures.



The Pickwick Papers of Charles Dickens. Issued in 19 monthly installments in 1836-37, the *Papers* created such public demand that the binders' orders rose from 400 for the first issue to 30,000 by the 15th. The first "general periodical" published in England appeared in 1691 under the title *The Athenian Mercury*; a learned journal, *Philosophical*

Transactions, was initiated in 1665. The only periodical known to have been published in the Classical Age was the *Acta*, an official gazette instituted by Julius Caesar in 59 B.C. Tin Kwang Tsin founded a newspaper in China about the year 400 A.D.

SERIALS CONTROL SERVICE

USE ALPS TO MANAGE YOUR SERIALS COLLECTION

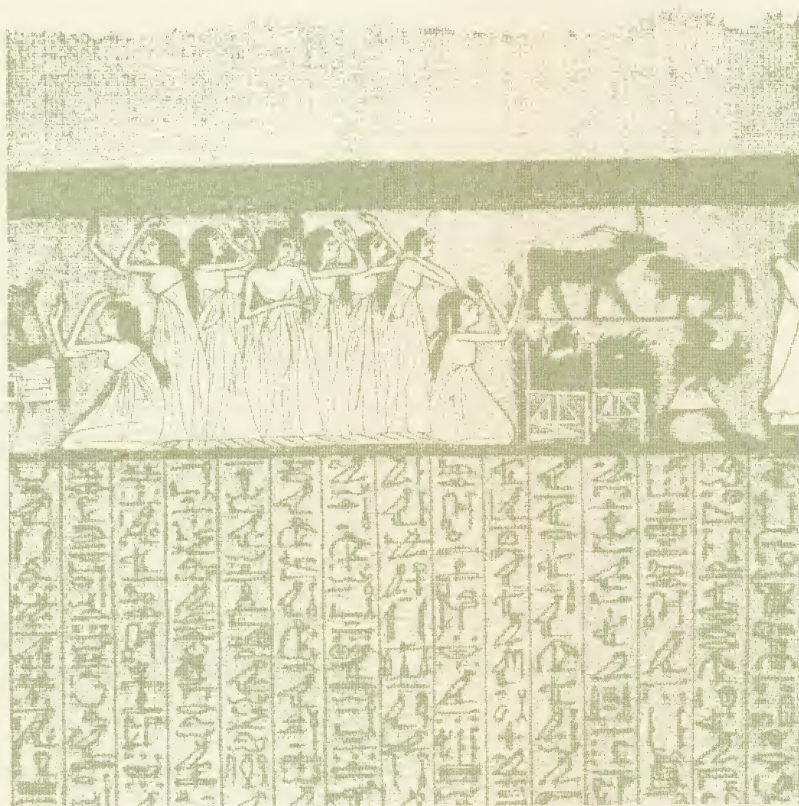
Serials control is a particularly troublesome function in most libraries, because a great deal of clerical labor is needed to keep track of subscriptions, to claim missing issues, to get completed volumes bound and to follow title or periodicity changes. To the computer, however, a serials subscription looks like a book order, and it can be handled in similar fashion. All you need do is type in receipt of each periodical issue and question the computer occasionally to find out if any issues are missing or which volumes are ready for binding. The status, location and history of any serial are quickly available.

GET RENEWAL ORDERS, BINDERY INFORMATION

When renewals are due, appropriate order forms are printed for you automatically at the Library Service Center. Subscription orders or renewals may also be requested by teletype. Automatically, or at your discretion, the computer prints claim letters and bindery notices. Because ALPS indexes your serials file on every element, you can examine your serials collection by status, by location, or by classification as well as by title.

TIGHTEN CONTROL

With the computer tracking every subscription, only a minimum amount of clerical work is necessary to keep a serials collection under firm control. There is no chance that you will overlook missing issues or expired subscriptions; binding can be planned and supervised conveniently.



Fragment of an Egyptian Book of the Dead. Egyptian writing developed phonetic symbols for consonant sounds but never abandoned concept hieroglyphs. In Mesopotamia, where writing was invented in the Fourth Millenium, pictorial forms were early displaced by phonetic cuneiform symbols. The modern alphabet of the Western world can be traced from the Phoenician alphabet, through Roman block capitals that reached final form in the first century A.D. and lower-case Irish half-uncials introduced in the sixth century.

MANAGEMENT INFORMATION SERVICES

USE ALPS TO COLLECT MANAGEMENT DATA

A great deal of information useful for library management is generated as a normal byproduct of ALPS use. The automated circulation processing subsystem, for example, yields data on the usage of various parts of your collection. With book prices that you add during technical processing, the computer can handle book fund accounting for your library. From the book fund accounting subsystem, you can derive vendor performance figures. Acquisitions and holdings data help you to quickly estimate the strengths and weaknesses of your collection in various subject areas. Many other kinds of quality and performance measures can be developed to suit your needs.

GET REPORTS AS YOU LIKE THEM

Since purchase information on each order is contained in the INPROS file for your library, the computer can quickly provide you with breakdown figures for each book fund on total spent, total encumbered and free balance. Order and receipt dates can be used to examine the performance of your various vendors. You can request reports that show the proportion of expenditures charged to your various funds, branches or departments, or to various subject areas of your collection. Other data in INPROS or in your circulation transaction records can be analyzed and reported to meet special requirements.

ALPS GIVES YOU JUST THE FACTS

ALPS can extract meaningful operating and qualitative data from the records created by normal library activity. More, ALPS provides the computer power to analyze the recorded data to meet your management needs. Best of all, you are not buried under high piles of reports; you get only that information which you request, when you request it. There is no need to maintain many records just in case you may need them some day.

Chained Library of Hereford Cathedral. Each of the 1500 rare volumes is chained to a rod on the bookcase. A bequest of books to the Sorbonne by Gerard of Abbeville in 1271 included the earliest known request for chaining; the first instance of a chained library in England is found in 1320. Circulating "rental" libraries arose about the same time, with booksellers of Paris and Bologna lending books to students for a fee. The London Bookstore of John Mein opened a circulating library in Boston in 1765, advertising a collection of over 650 books "which are lent to read, at one pound, eight shillings, lawful money, per year; eighteen shillings per half year; or ten and eight pence per quarter."



CIRCULATION PROCESSING SERVICES

USE ALPS TO HANDLE CIRCULATION

A number of libraries already enjoy the benefits of an automated* circulation processing system. Such systems require conversion to machine-readable form of at least part of the catalog record for each book. Generally, an identity badge that can be read by a data recording device is issued to each borrower. When the book is circulated or returned, the transaction is recorded by placing the machine-readable book card and the borrower's badge in the data recording device—a quick and simple process.

GET CIRCULATION RECORDS, OVERDUE NOTICES

The Library Service Center runs a set of programs daily to provide a listing of books currently on loan. In addition, overdue notices are prepared automatically, and a special listing is printed of borrowers who remain delinquent. The programs can be used to answer questions such as who has borrowed a particular book or what books are on loan to a particular patron. The programs can be run at any data processing center having an IBM 360/50 or larger computer, as well as at the Library Service Center itself.

UPGRADE CIRCULATION

Unlike microfilm circulation recording systems, ALPS provides a printed listing that can be used directly to see what books are out and who has them. You need never wonder if a book requested by a patron is misshelved somewhere. You never have to type overdue notices or keep circulation statistics by hand. The circulation history file will provide you with statistics describing the volume and distribution of your circulation in every subject area.



Typesetter pouring lead into a casting matrix (woodcut by Jost Amman published in 1568). The original "hot type" used by Gutenberg was actually a mixture of lead, antimony and bismuth that could be melted rapidly but cooled to a hard enough substance to withstand the pressure of heavy oaken presses. An almost identical mixture is used today. As early as the second century A.D. in China, wood block printing, a forerunner of lithography began. In the 11th century, the Chinese manufactured movable type of baked clay, and shortly thereafter, metal type.

MISCELLANEOUS SERVICES

MARC INDEX

The Library Service Center produces a frequently cumulated weekly index to the latest MARC tape. The basic index contains listings by LC card number, author, title and series; additional elements can be included upon request. This service is available on a subscription basis.

SUPPORT TO LIBRARY NETWORKS

The Automated Library Processing Services system, thanks to the versatility of its information retrieval program, can be easily tailored to meet special user needs. Already in existence are the basic computer capabilities needed, for example, for supporting a large library system or network, for handling interlibrary loan requests or for automating the operation of a centralized technical processing agency. In an educational application, the ALPS system could be adapted to cover learning resources for a large school district, including annotations and index terms that designate the grade levels and curriculum units for which the materials are most appropriate.

SUPPORT TO SPECIAL LIBRARIES

In special libraries and information centers ALPS can handle tailored files for use by any client with a teletype anywhere in the country. Such files might contain economic data needed by business firms, structural data used by architects and engineers, or almost anything else for which there is strong demand.

SUPPORT TO RESEARCHERS

ALPS provides researchers in library and information science with a powerful tool for their investigations. Easy access to MARC data, and to the wealth of library operational data in the ALPS files, will facilitate a number of interesting studies. SDC DATACENTERS provide the time-shared programming and data management tools with which to carry out detailed analyses of bibliographic and library data.

The Imperial Library, Vienna, 1711. High ceilinged rooms of Hofberg Castle housed collection of the Austrian National Library between 1623 and 1726. With erection of a new building in the early 1900s, library routines were completely reorganized, a 20th century trend. Architecture of classical libraries aimed more toward public display than book



processing. Usually the book rooms, lined with storage shelves, adjoined a central reading room that was adorned with murals and statuary representing deities or luminaries of the literary world (e.g. Homer in Greece, Virgil in Rome). The great hall of a classical library was a place for lectures, rhetorical contests, declamations and public meetings.

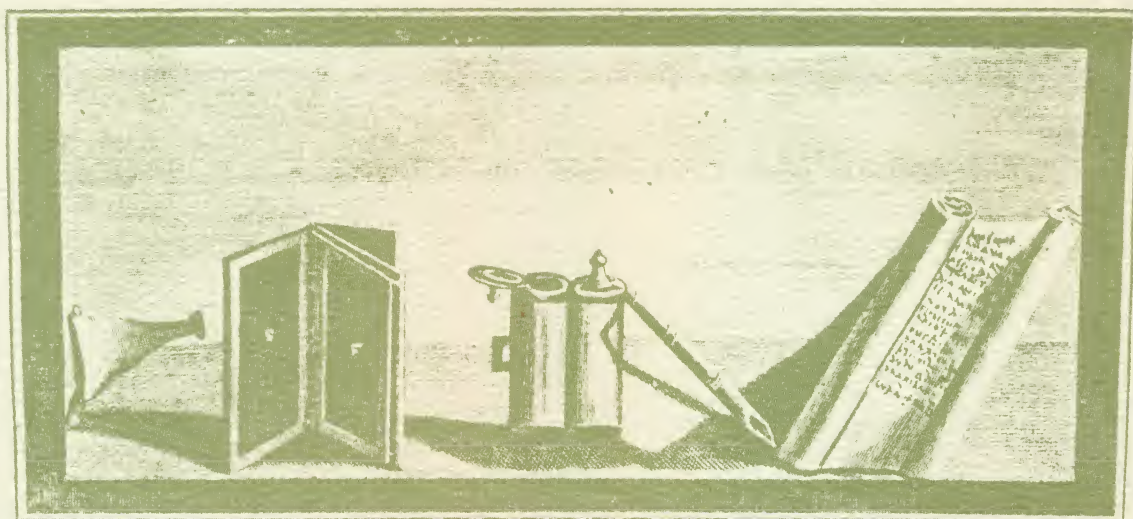
CONSULTING SERVICES



System Development Corporation is a pioneer in the application of computers to information science. From early work on problems of information storage and retrieval, the corporation has expanded rapidly into the design and development of library systems. It sustains an active and continuing program of research and development in the information and library science fields.

The SDC Library Service Center is staffed by professionals from the Library and Documentation Systems Department who are well versed in both computer applications and library operations. In recent years, these experts participated in many major national studies such as those resulting in the publications, Overview of the Library Services and Construction Act—Title I, Technology in Libraries and Annual Review of Information Science and Technology. In addition to their research work, department staff members have a wide background of practical experience in information system analysis and design, programming and system implementation, testing, evaluation and training.

The SDC Library Service Center offers a full range of library automation consulting services, from advice on single problems through complete design and implementation of large-scale information handling systems.



Still life of writing materials and roll book from mural discovered at Herculaneum.

Continued from inside front cover

Despite the widespread hostility to pagan learning and limited publication of new knowledge during the early Middle Ages, these years saw the formulation of important techniques for the organization and administration of libraries. Founders and superiors of the great monasteries from Benedict in the early sixth century to the Carthusians in the eleventh and the Dominicans in the thirteenth wrote out detailed rules for library management and the proper care of books. It was in these centers of learning that the art of manuscript illumination germinated and flourished. By the time the ancient classics were reintroduced into the West, devotion to books had become a habit of mind among the orders that produced the librarians, translators and scholars of medieval and early Renaissance years.

By 1500 mechanical printing had revolutionized the process of human communication. A watershed invention in the annals of human civilization, the printing press had an irreversible impact on the development of libraries. On the one hand, mechanical printing displaced the labor of copyists; on the other, it stimulated dramatic increases in writing and publication. The rapid multiplication of books required new techniques in indexing and classification, and their lower cost made possible the establishment of more libraries. Universities and schools, then parishes, learned societies and municipalities built, staffed and stocked libraries. Thanks largely to the economies of mass printing, the library as an institution and library science as a profession were able to offer larger collections of books to ever increasing proportions of the population.

In the American Colonies groups of interested citizens formed private subscription libraries, several of which, like the Philadelphia Library Company, served as reference collections for the new national government. Eventually, as the frontiers were settled, people in the towns and cities voted to tax themselves to support libraries that would be open to everyone. In the 19th century, the free public library movement played an important role in the rapid absorption of immigrants into the "great melting pot" of the United States.

The 20th century has witnessed the burgeoning of new technologies for the generation, transmission, storage, retrieval and use of information. These technologies have stimulated demands on libraries for a greater range of services, causing serious overloads on traditionally scanty library budgets not only for acquisition of materials but especially for their handling by library staffs. Computer technology early promised improved techniques for managing library operations economically, but this promise has long remained unfulfilled.

The history of library development is one of seeking out the best an age has to offer—in the way of materials, instruments, art and architecture, organizational concepts—and combining them to best serve the needs of patrons. Today, there is a new development. The interactive computer, the distribution of machine-readable cataloguing records, and the concept of the service center are combined for the first time in an operational system for libraries. Offered by the SDC Library Service Center, this combination begins to tap the potential of the new technology for libraries. The promise will yet be realized.

To arrange for a demonstration of one or more services available through the SDC Library Service Center, please write or phone Jules Mersel, System Development Corporation, 2500 Colorado Avenue, Santa Monica, California 90406. Phone (213) 393-9411, Ext. 7528 or 7529.



SYSTEM DEVELOPMENT CORPORATION • 2500 COLORADO AVENUE • SANTA MONICA, CALIFORNIA 90406

Return Address
System Development Corporation
2500 Colorado Avenue
Santa Monica, California 90406

FIRST CLASS



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	SCHOOLEYS MTN	
	NJ 07870	



Public Systems Division

SYSTEM DEVELOPMENT CORPORATION

2500 Colorado Avenue, Santa Monica, California 90406

April 17, 1970

Thank you for your inquiry about SDC's ALPS (Automated Library Processing Services) system. This letter and the enclosed brochure describe our programs and services, which you may wish to consider when planning to initiate or improve automation in your library.

SDC is developing computer program systems to provide automated support for acquisitions, cataloging, reference, circulation, and serials control. Some systems, such as that for serials control, operate on a time-shared IBM 360/67 computer which may be accessed from a teletype terminal in your library. Other systems, such as that for circulation control, can operate off-line at local data processing installations. Four systems are currently operational: on-line serials control, off-line circulation control, bookform catalog production, and on-line, on-demand special bibliographies. The availability of the on-line systems for general use depends upon having a customer set of 30-40 libraries to support the fixed expenses of a large-scale computer facility. However, the complete set of ALPS programs are available to large-scale library systems and networks on a permanent lease basis.

Pilot versions of on-line acquisitions, cataloging support, accounting, and circulation control systems have been demonstrated in several cities during the last year. Development of effective operational versions is well advanced. We envision that these on-line systems will be most useful for library networks, cooperatives, consortia, etc., where participating libraries can minimize costs and assist each other by providing bibliographic information to fill the holes caused by the present time lag and incomplete coverage of the Library of Congress' MARC cataloging distribution service.

The off-line circulation control system can be furnished on a permanent lease basis for a one-time charge of \$6,400, which includes installation, training, a user's manual, and program system maintenance for one year. This package processes up to 1,000 transactions (or more, if necessary) per day, producing listings of books in circulation, returns, books on loan to a particular individual, and overdue notices. Transactions are recorded on punched cards produced

by any standard data recording device, using a punched book card and a plastic borrower identification card. The computer programs run on an IBM 360/40 or larger computer with a 2314 utility disk, three 9-track tape drives, and a core partition of 180K.

Use of the circulation control system requires conversion of at least the call number, author, and title for each book. The most economical way to perform the conversion is to use an IBM Selectric typewriter to record this information for books circulated during the previous three to six months, then use an optical scanner to perform the conversion itself, and prepare punched book cards with a computer program.

Alternatively, most of the catalog record for each book in your collection could be converted, thereby not only providing the information for preparing punched cards but also giving you the capability to print bookform catalogs. Assuming that your staff does the typing, the scanning and preparation of the machine-readable file would cost about \$.62 per record. A bookform catalog divided by author, title, and subject, in upper and lower case on computer listing paper in 4-6 copies or on roll microfilm, would cost about \$.50 per main entry. Your converted catalog could also be loaded onto the ALPS time-sharing system. This capability would be useful for providing special bibliographies to library users on any subject as well as assisting you to evaluate the strengths and weaknesses of your collection in various subject areas.

Our department is thoroughly experienced in research, system analysis and design, development, training, and system integration of library automation systems. We would be pleased to provide assistance in these tasks for your library, calling upon our seasoned staff of library and automation experts. Of particular interest to you might be the use of ALPS as a testbed to evaluate your own ideas of system design, or as a means of complementing the work you have already accomplished.

Should you desire additional information or further explanations of the matters discussed in this letter, please call me (collect) at (213) 393-9411, extension 7618, and I shall be happy to be of service.

Sincerely,

Karl M. Pearson, Jr.

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SP *a professional paper*

MARC AND THE LIBRARY SERVICE CENTER:
AUTOMATION AT BARGAIN RATES

by

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There are two questions in the minds of many librarians: "What do I have to do to automate my library?" and, "What do I have to do to use the MARC tapes?" The answer to both questions is: Nothing. Within one or two months, librarians will be able to buy a bagfull of automated products and services without putting a large dent in their budgets or learning to speak computerese.

Imagine the following scene in a technical processing office. The office looks like any such office you are familiar with, except that in this office the piles of books being processed are somewhat lower. The only other difference—and even this will not be a difference for some libraries—is the presence of a teletype machine.

The technical processing librarian hands a list of books to be ordered to a clerk. Instead of turning to her typewriter, the clerk goes to the teletype. For each order, she types in the Library of Congress card number and any special ordering instructions, such as an infrequently used book fund to be encumbered or the name of the person who requested the book's purchase. Afterward, the teletype writes out a request for more information for one of the orders; that book is unusual because it had not been cataloged by the Library of Congress. The clerk types in the basic bibliographic description for the book.

In another part of the office a receiving clerk checks over a shipment of books. When she completes the check-in process, she takes her turn at the teletype to write a brief note about the receipt of each book. The books themselves go on to Cataloging.

During the day the receiving clerk gets a package of forms and listings from a nearby Library Service Center. The package contains book orders on the familiar 3x5 inch multiple part form, a computer printout listing of the orders, several duplicate copies of claim letters sent to a vendor who hasn't delivered on time; sets of catalog cards or worksheets, and book pockets and spine labels, for the books which were received one or two days ago; a stack of announcement bulletins describing the library's latest acquisitions; a set of punched book cards to be used with the library's automated circulation system; and a set of listings describing yesterday's circulation transactions. The clerk passes the various forms and listings to the appropriate people.

The head librarian has a question about the status of one of her book funds. Instead of going to a ledger or report, she goes to the teletype and types in her question. The teletype writes out the answer to the question within a few seconds. While she is at it, the librarian also asks a question about the status of one of the book orders. Again, the answer is written out almost immediately.

12 September 1969

-5-

SP-3410

ordinary telephone line. Several kinds of terminals are available today, although none of them is completely satisfactory for library use. The teletype machine, however, has an advantage for libraries in that it may be used both as a computer terminal and as an ordinary telecommunication device which some libraries are already using for interlibrary loan.

With time-sharing, one major impediment to practical library automation has been removed. The other major stumbling block—the cost for converting the catalog record to machine-readable form—is on the way out as a hindrance to library automation. The Information Systems Office of the Library of Congress, headed by Mrs. Henriette D. Avram, has performed an outstanding service for the library community at large. Their achievement in designing and gaining acceptance for the MARC II format is historic. The efforts of a few people at the Library of Congress to develop and operate the MARC II system for distributing cataloging data in machine-readable form will have an incalculable payoff for the whole library community.

With the advent of MARC II, more and more monographs will be included in machine-readable catalog records available from a central source and prepared by the most authoritative body of catalogers in the country. Almost as important is the acceptance by the library community of a standard format for communicating cataloging information on magnetic media such as tapes or discs. Because only one computer program is needed to interpret the standard

format, the cost for writing many programs to handle many different formats is eliminated almost entirely. The largest proportion of computer programming costs in the past has been closely connected to the necessity for processing data appearing in variegated formats. Acceptance of the MARC II format as the standard for the library community makes possible economies in programming which will significantly reduce automation costs.

The most immediate effect of the MARC tapes is likely to be felt in the area of library acquisitions and technical processing. With a major portion of the bibliographic data required by all libraries for book ordering and cataloging already available in machine-readable form, the processing effort should be greatly simplified since automated assistance will be economically feasible. Instead of hundreds or thousands of clerks all over the English-speaking world laboriously typing out almost identical orders for the same book, machines will be able to perform this chore. Instead of using clerical labor for maintaining in-process and accounting files, librarians can use computers to perform the bulk of the necessary record-keeping processes while the clerks can be used more profitably in improving library services to patrons.

The current trend toward centralization of the tedious, time-consuming, and labor-heavy details of book ordering and processing will probably be reinforced by the availability of MARC tapes. A few keystrokes are all that is necessary to place an order or record the receipt of a book. With just

12 September 1969

-7-

SP-3410

this little manual labor to start things off, an automated system working from the MARC tapes can go on to produce cataloging worksheets, accounting reports, book cards, book pockets, and spine labels exactly when needed to ready the books for shelving. A central processing agency will be an efficient and effective operation, relieving individual libraries from the problems of managing a production line, yet allowing for special requirements for each library. Centralized processing may not even have to be a library function; a few large book vendors are rapidly developing their own technical processing centers.

The development of the CARDS system by the Library of Congress also lends weight to the centralization of book processing. With CARDS, the amount of time required by the Library of Congress to fill orders for catalog cards will be cut significantly. The MARC tapes will provide cataloging data which will be fed into a large photocomposition machine to produce graphic—arts—quality printed cards. The whole operation will be set into motion in direct response to orders sent in by libraries and processing centers; this will be much more efficient than the present system of trying to fill orders from stock on hand. Assuming that cards can be delivered almost as fast as proof slips are now, there will no longer be as much need for local production of cards for those books which the Library of Congress has cataloged.

With a significant proportion of a library's holdings already in machine-readable form thanks to MARC, the cost of converting the remainder of a library's catalog will be greatly reduced. The cost reduction will become even greater as the availability of non-MARC bibliographic data (in MARC format) increases with the conversion of more and more catalogs. When a complete catalog is in machine-readable form, automation can be extended to other library processes. Book catalogs may be produced and cumulated quite economically, especially if computer-to-microfilm (COM) output provides an acceptable quality of print. Even if COM is not satisfactory for some libraries, photocomposition may provide a suitable means for producing graphic-arts-quality book catalogs. The cost for photocomposition is kept high at present by the small volume of work being supplied to expensive but highly productive photocomposition machines. As volume increases, the cost for photocomposition will drop dramatically.

In fact, with COM, the "scroll" catalog may join the card file and the book as a popular catalog form. A scroll catalog, on roll microfilm, has some of the advantages of a book catalog plus the important advantage of low cost. A roll microfilm master can be produced cheaply with COM and can be duplicated any number of times for little money more. Microfiche sets of the catalog can be made easily from the master roll for people who find sheet microfilm easier to use than roll film. The scroll catalog is already in wide use in business and industry; Sears and Roebuck, for example, has its parts catalog on microfilm at each store. The New Jersey State Library demonstrated

12 September 1969

-9-

SP-3410

a catalog on microfilm cassettes at the ALA Conference in Atlantic City this last June. The scroll catalog, especially when used for relatively small collections such as found in schools, junior colleges, and colleges, would be cheap enough that library patrons could well afford to buy their own copy, assuming they had easy access to a microfilm reader. In such an eventuality, what would be the implications for circulation, especially if patrons could place mail or phone orders?

Union catalogs will be especially easy to produce and maintain. This should be a boon for library networks or systems at any level--city, school, county, region or state--with automated assistance for interlibrary loans and a special capability for shifting books within the network to meet sudden demands. Union catalogs could be made available in either book or scroll form. Another alternative might be to do away with catalogs altogether, using a terminal to search the catalog records stored on the computer. The computer-based records would always be up-to-date, cumulated, and correctly filed.

Reader services will be enhanced by the ability, using MARC and MARC-formatted bibliographic information, to produce special bibliographies and reading lists regularly or on demand. This feature might be especially useful for school and academic libraries, which would supply both teachers and students with a wide variety of special purpose bibliographies with very little effort on the part of the librarian. For public libraries, it would be possible to provide special reading lists at opportune moments to take advantage of local events, or to service special community groups.

Such are some of the library services made possible through the combination of time-sharing and the availability of the MARC tapes. Imaginative librarians will undoubtedly think up new services. In fact, the most exciting thing about this library automation business is that librarians will be relieved of stock jobbing and can devote their full attention to providing just the right book or information to the right person at the right time.

At this point, you may say, "Promises, promises, but I've heard all this before!" True, you probably have, since automation experts and information scientists, like other pioneers, tend to be incurable optimists. But now the optimism is justified by the impending capability to deliver on some of the early promises of automation. The key to this capability is the development of the Library Service Center concept.

At the American Library Association Conference in Atlantic City, there were several exhibitors whose displays and demonstrations hinted at the emerging concept of the Library Service Center. Some of the largest book vendors were offering an increased range of purchasing and processing services, one going so far as to offer a computer program for sale. The Library of Congress exhibited a detailed and beautifully illustrated description of the plans for the CARDS system which automates the servicing of orders for catalog cards. System Development Corporation used a teletype terminal connected by telephone to a computer in Santa Monica, California, to

demonstrate on-line retrieval of bibliographic data from a MARC-based file. Even though the program used for the demonstration was not designed for librarians, visitors to the exhibit had little difficulty in learning to operate the program themselves.

From the beginnings in evidence at Atlantic City, there should be a rapid emergence of a true central agency or firm offering a wide range of computer-based products and services. The Library Service Center will be an organization of librarians, computer specialists, and clerks who will operate a time-sharing system which provides as little or as much automation as required to service a number of client libraries. The Service Center might be operated by a library organization such as a state library or regional library network, but more probably--at least for the near future--it will be run by a commercial firm.

The Service Center will receive the weekly MARC tapes from the Library of Congress, prepare special indexes from the tapes as desired by the customer libraries, then add the bibliographic records to a master cumulated file to which the central computer has access. As the customer libraries engage in transactions with the Service Center through the time-sharing teletype terminal located at each library, the central computer will use the master file in various ways to record book orders, answer requests for bibliographies, or provide cataloging information. The computer will also save some information in special files to be processed at a later time or by another

computer which operates more efficiently in batch mode rather than in time-sharing mode. An in-process file for each customer library will be maintained on-line so questions about the status of any item can be answered immediately.

From time to time, as needed, the files for book orders and cataloging materials will be processed by the computer. As the end product of this processing, computer-printed book orders, technical processing, and cataloging materials will be delivered to the clerks who will perform quality control checks and package the materials for delivery to the customer libraries, or to vendors or technical processing centers.

On a daily basis, the circulation programs will be run to provide customer libraries with listings showing which books are out or have been returned. Overdue notices will be produced automatically. New book cards will be punched if replacements are needed. For customers who want to make a statistical analysis of circulation transactions, the Service Center will adapt standard programs, or will write a new one, to do any kind of analysis on the data available that a librarian can imagine.

A Service Center might also provide consultants who can work with a customer to determine whether or not a book or scroll catalog would be desirable. If it were, then the consultants could assist the customer to design an attractive format for the catalog and they would handle the technical problems

involved in getting the catalog composed and printed. Once the catalog is produced, the Service Center would be able to produce supplements and cumulations when needed as a simple byproduct of the customer's normal acquisitions activities handled by the Center.

In using a Service Center, customer libraries will pay only for the products and services they need. A customer may start or stop service pretty much at will, since there will be little investment of money or manpower on the library's part. The Service Center may be just the answer for those libraries which have been considering beginning an automation project of their own but have had difficulty in justifying the heavy costs even just for planning and directing such an effort. A great deal more of an investment would be necessary to acquire a group of system designers and computer programmers who have some knowledge of the special problems involved in library automation, and to pay the cost of computer time for system development. The Service Center concept is a logical division of labor; information processing, computer, printing, and production experts perform their special functions without bothering the librarian, and the librarian is left free to concentrate on his special professional problems of serving the library's patrons more effectively.

There has been a great deal of research and development in the field of library automation during the last few years. Operating libraries have been unable to reap the benefits promised by technology, however, because

12 September 1969

-14-
(Last page)

SP-3410

of the high cost for building and maintaining their own single purpose computer-based systems and for converting bibliographic data to the form required for computer processing. But computer and programming technologies, such as time-sharing and disc mass storage devices, bring automation costs, if spread over a number of users, within the range of economic feasibility. Now, the distribution of MARC II tapes by the Library of Congress is dramatically cutting the costs for data conversion. The combination of these advances is about to open up the automated library services market for serious business.



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